

PERFORMANCE AUDIT
OF THE
TRAFFIC AND SAFETY SUPPORT AREA

BUREAU OF HIGHWAY DELIVERY
MICHIGAN DEPARTMENT OF TRANSPORTATION

January 2005

“...The auditor general shall conduct post audits of financial transactions and accounts of the state and of all branches, departments, offices, boards, commissions, agencies, authorities and institutions of the state established by this constitution or by law, and performance post audits thereof.”

– Article IV, Section 53 of the Michigan Constitution

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Michigan *Office of the Auditor General* **REPORT SUMMARY**

Performance Audit Traffic and Safety Support Area Bureau of Highway Delivery Michigan Department of Transportation

Report Number:
59-162-04

Released:
January 2005

The Michigan Department of Transportation's (MDOT's) mission is to provide the highest quality transportation for economic benefit and improved quality of life. The Traffic and Safety Support Area (TSSA) is responsible for meeting the traffic engineering responsibilities and requirements of MDOT through several support area programs. The central office and the seven region offices share the day-to-day resource management to carry out program objectives.

Audit Objective:

To assess the effectiveness of MDOT's procedures for selecting and administering traffic and safety capital outlay projects.

Audit Conclusion:

We concluded that MDOT's procedures for selecting and administering traffic and safety capital outlay projects were generally effective. However, we noted reportable conditions related to crash site surveillance, project file documentation, and guardrail inventory (Findings 1 through 3).

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Audit Objective:

To assess the effectiveness of TSSA's quality assurance review of highway construction design plans.

Audit Conclusion:

We concluded that TSSA was effective in performing its quality assurance review of highway construction design plans. Our report does not include any reportable conditions related to this audit objective.

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Audit Objective:

To evaluate the effectiveness of TSSA's procedures for selecting, monitoring, and evaluating consultants that perform traffic and safety project design functions.

Audit Conclusion:

We concluded that TSSA's procedures for selecting, monitoring, and evaluating consultants that perform traffic and safety project design functions were generally effective. However, we noted a reportable condition related to disclosure of interest (Finding 4).

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Agency Response:

Our report contains 4 findings and 4 corresponding recommendations. MDOT's preliminary response indicated that it agreed with all of the findings and that it has taken or will take steps to comply with all of the recommendations.

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January 11, 2005

Mr. Ted B. Wahby, Chairperson
State Transportation Commission
and
Ms. Gloria J. Jeff, Director
Michigan Department of Transportation
Murray Van Wagoner Transportation Building
Lansing, Michigan

Dear Mr. Wahby and Ms. Jeff:

This is our report on the performance audit of the Traffic and Safety Support Area, Bureau of Highway Delivery, Michigan Department of Transportation.

This report contains our report summary; description of agency; audit objectives, scope, and methodology and agency responses and prior audit follow-up; comments, findings, recommendations, and agency preliminary responses; a map of region areas, presented as supplemental information; and a glossary of acronyms and terms.

Our comments, findings, and recommendations are organized by audit objective. The agency preliminary responses were taken from the agency's responses subsequent to our audit fieldwork. The *Michigan Compiled Laws* and administrative procedures require that the audited agency develop a formal response within 60 days after release of the audit report.

We appreciate the courtesy and cooperation extended to us during this audit.

Sincerely,

A handwritten signature in black ink, reading "Thomas H. McTavish".

Thomas H. McTavish, C.P.A.
Auditor General

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Description of Agency

The Michigan Department of Transportation (MDOT) was organized under Sections 16.450 - 16.458 of the *Michigan Compiled Laws* (sections of the Executive Organization Act of 1965). MDOT is governed by the State Transportation Commission, which is made up of six members who are appointed by the Governor with the advice and consent of the Senate. The Commission is responsible for establishing policies. MDOT is managed by a director, appointed by the Governor, who is responsible for administering MDOT and implementing the policies established by the Commission. MDOT's mission* is to provide the highest quality transportation for economic benefit and improved quality of life.

The Traffic and Safety Support Area (TSSA) is responsible for meeting the traffic engineering responsibilities and requirements of MDOT through several support area programs. The central office and the seven region offices share the day-to-day resource management to carry out program objectives. The program objectives are directed toward achieving the maximum benefit to the traveling public and Michigan's business and industrial sectors. TSSA's products and services and their resultant impacts are focused on decreasing traffic crashes and injuries, vehicle delay, fuel consumption, air pollution, and vehicle operating costs.

TSSA's main areas of responsibility include:

- Responding to traffic engineering requests from the public as well as from legislative, governmental, and private agencies in cooperation with and support of the regions.
- Supporting the regions in evaluating needs and designing and authorizing installation, modification, or modernization of traffic control safety devices.
- Administering traffic operations and safety programs to systematically plan, design, prioritize, and evaluate projects that reduce traffic crashes and injuries, vehicle delay, fuel consumption, air pollution, and vehicle operating costs and increase safety, efficiency, and capacity of the State trunkline system*. TSSA was responsible for administering over \$50 million in traffic and safety capital outlay

* See glossary at end of report for definition.

projects for the fiscal year ended September 30, 2003. Funding is provided for projects related to road signs, pavement marking, guardrail replacement, traffic signals, and safety capital outlay road construction improvement projects. The majority of this funding was received from the federal government with projects requiring a State funding match of up to 20%.

- Planning, designing, implementing, and maintaining a traffic engineering data records system consisting of crash records, traffic volume, roadside features, traffic control devices, and driver information. This information is used to support the regions' crash surveillance program and safety review of every State trunkline road and bridge project.
- Providing engineering support for litigation against MDOT and coordinating MDOT's risk management activities.

TSSA's expenditures totaled \$5.6 million for the fiscal year ended September 30, 2003. As of November 2003, TSSA had 45.5 full-time equated employee positions.

Audit Objectives, Scope, and Methodology and Agency Responses and Prior Audit Follow-Up

Audit Objectives

Our performance audit* of the Traffic and Safety Support Area (TSSA), Bureau of Highway Delivery, Michigan Department of Transportation (MDOT), had the following objectives:

1. To assess the effectiveness* of MDOT's procedures for selecting and administering traffic and safety capital outlay projects.
2. To assess the effectiveness of TSSA's quality assurance review of highway construction design plans.
3. To evaluate the effectiveness of TSSA's procedures for selecting, monitoring, and evaluating consultants that perform traffic and safety project design functions.

Audit Scope

Our audit scope was to examine the program and other records of the Traffic and Safety Support Area. Our audit was conducted in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States and, accordingly, included such tests of the records and such other auditing procedures as we considered necessary in the circumstances.

Audit Methodology

Our audit procedures, conducted from February through April 2004, included examination of TSSA's records and activities primarily for the period October 1, 2001 through March 31, 2004.

We conducted a preliminary review of TSSA's operations to formulate a basis for defining the audit objectives and scope. Our review included interviewing TSSA personnel, reviewing MDOT policies and procedures, and analyzing available data and statistics to obtain an understanding of TSSA's operational activities.

* See glossary at end of report for definition.

To assess the effectiveness of MDOT's procedures for selecting and administering traffic and safety capital outlay projects, we reviewed MDOT's procedures for identifying locations with traffic and safety concerns and allocating project funding. We analyzed traffic and safety capital outlay project files to determine if projects met selection criteria, contained required documentation, and were approved for funding. We reviewed the regions' process for analyzing high crash locations and submitting requests for safety projects.

To assess the effectiveness of TSSA's quality assurance review of highway construction design plans, we reviewed MDOT's procedures related to performing highway construction design plan evaluations. We analyzed TSSA project files to determine if TSSA performed reviews of the construction design plans in accordance with MDOT procedures.

To assess the effectiveness of TSSA's procedures for selecting, monitoring, and evaluating consultants that perform traffic and safety project design functions, we interviewed agency personnel and reviewed MDOT procedures. We examined TSSA project files to determine if consultants were properly selected, monitored, and evaluated in accordance with MDOT procedures.

Agency Responses and Prior Audit Follow-Up

Our report contains 4 findings and 4 corresponding recommendations. MDOT's preliminary response indicated that it agreed with all of the findings and that it has taken or will take steps to comply with all of the recommendations.

The agency preliminary response that follows each recommendation in our report was taken from the agency's written comments and oral discussion subsequent to our audit fieldwork. Section 18.1462 of the *Michigan Compiled Laws* and Department of Management and Budget Administrative Guide procedure 1280.02 require MDOT to develop a formal response to our audit findings and recommendations within 60 days after release of the audit report.

We released our prior performance audit of the Traffic and Safety Division, Bureau of Highway Technical Services, Michigan Department of Transportation (#5916298), in March 1999. We followed up 2 of the 7 prior audit recommendations within the scope of this audit and repeated these 2 recommendations in this report.

COMMENTS, FINDINGS, RECOMMENDATIONS, AND AGENCY PRELIMINARY RESPONSES

PROCEDURES FOR SELECTING AND ADMINISTERING TRAFFIC AND SAFETY CAPITAL OUTLAY PROJECTS

COMMENT

Audit Objective: To assess the effectiveness of the Michigan Department of Transportation's (MDOT's) procedures for selecting and administering traffic and safety capital outlay projects.

Conclusion: We concluded that MDOT's procedures for selecting and administering traffic and safety capital outlay projects were generally effective. However, we noted reportable conditions* related to crash site surveillance, project file documentation, and guardrail inventory (Findings 1 through 3).

FINDING

1. Crash Site Surveillance

MDOT's seven regions did not always perform a safety surveillance analysis or prepare a surveillance report for the review of high traffic crash site locations. As a result, MDOT cannot be assured that all high traffic crash site locations were analyzed to ensure that the most critical crash site locations were recommended for implementation of traffic and safety capital outlay road construction improvement projects.

MDOT Crash Surveillance Region Guidelines require that each region perform a safety surveillance analysis of identified high traffic crash site locations along the State trunkline system. The objective of performing the safety surveillance analysis is to reduce traffic crash injuries and fatalities on the State trunkline system to the maximum extent possible with limited available resources.

The safety surveillance analysis involves scrutinizing high traffic crash site locations to identify areas where traffic and safety countermeasures could be implemented to reduce crashes. Each region is also required to prepare a surveillance report to document its final traffic crash site analysis conclusions and to provide recommendations for potential traffic and safety capital outlay road construction improvement projects. The Traffic and Safety Support Area (TSSA)

* See glossary at end of report for definition.

requires the regions to prepare a safety surveillance analysis of high traffic crash site locations approximately every two years; the last request for an analysis occurred on September 30, 2003.

Our review of the regions' safety surveillance analysis and surveillance report process disclosed:

- a. Five of the 7 regions did not complete a safety surveillance analysis of all identified high traffic crash site locations. These regions completed a safety surveillance analysis of crash site locations for some of the transportation service centers (TSCs) or only for projects submitted to TSSA for review and potential project implementation. Without completion of a safety surveillance analysis of all crash site locations, MDOT cannot be assured that the most critical crash sites were identified as potential locations to implement traffic and safety capital outlay road construction improvement projects.
- b. Four of the 7 regions did not prepare a surveillance report. Without preparation of a surveillance report, MDOT cannot be assured that the regions analyzed and documented their basis for recommending traffic and safety capital outlay road construction improvement projects for identified high traffic crash site locations.

RECOMMENDATION

We recommend that MDOT's seven regions perform a safety surveillance analysis and prepare a surveillance report for the review of high traffic crash site locations.

AGENCY PRELIMINARY RESPONSE

MDOT agreed with this finding. MDOT stated that its policy is to perform a surveillance analysis and prepare a surveillance report on the review of high traffic crash locations. MDOT stated that it has transmitted the latest high crash lists and instructions for performing the required analysis and reports to the regions. The analysis and reports are to be completed by October 1, 2005.

FINDING

2. Project File Documentation

MDOT did not obtain all required project justification documentation for use in analyzing and selecting traffic and safety capital outlay road construction improvement projects. Without all required project documentation, MDOT could not ensure that all traffic and safety capital outlay road construction improvement projects were selected in a manner that provided the greatest safety benefits.

TSSA approves funding for traffic and safety capital outlay road construction improvements projects based upon the regions' surveillance and analysis of high traffic crash site locations. Regions identify locations where potential road construction safety projects could reduce traffic crashes and calculate the estimated costs and benefits associated with project implementation. The regions use standardized cost and benefit calculations that provide for a uniform process to evaluate potential safety projects that compete against each other for funding. MDOT allocated over \$11.8 million for traffic and safety capital outlay road construction improvement projects for the fiscal year ended September 30, 2003.

In our review of 12 traffic and safety capital outlay road construction improvement project files for projects approved by TSSA for construction and with anticipated contract bid letting* dates during our audit period, we noted instances in which project files did not contain required documentation or contained outdated information. Our review disclosed:

- a. Two (17%) files did not contain work descriptions for the proposed safety projects. TSSA procedures require that the regions submit work descriptions with the project proposals to provide TSSA with information about the purpose or need for the projects.
- b. Three (25%) files did not contain evidence that TSSA completed a geometric scheme quality assurance review of the construction design plans. TSSA procedures require that each approved road construction improvement project receive a quality assurance review to ensure that elements of the design plans comply with governing highway safety standards, policies, and guidelines.

* See glossary at end of report for definition.

- c. In 4 (33%) instances, the regions used outdated cost and benefit information and outdated crash lists to perform their cost and benefit safety analysis calculations. The regions and TSSA rely on the calculations to select road construction improvement projects for funding. Using outdated information to perform safety analysis calculations does not allow for uniform analysis among all proposed projects and could cause funding of projects that do not provide the greatest safety benefits.

RECOMMENDATION

We recommend that MDOT obtain all required project justification documentation for use in analyzing and selecting traffic and safety capital outlay road construction improvement projects.

AGENCY PRELIMINARY RESPONSE

MDOT agreed with this finding. MDOT stated that TSSA has added staff to the Safety Programs and Geometric Design Units and has completed extensive training throughout the regions on the required project justification and documentation procedures. MDOT also stated that the Geometric Design Unit is performing quality assurance reviews on all road and bridge projects. In addition, MDOT stated that the latest high crash lists and updated analysis information was supplied to each region for cost-benefit analysis of projects. Finally, MDOT stated that it is now receiving the required documentation for the project files.

FINDING

3. Guardrail Inventory

MDOT did not maintain an updated guardrail inventory for the State trunkline system. As a result, MDOT could not easily identify guardrail that was outdated and in need of replacement.

There are approximately 8.4 million feet of guardrail in the State trunkline system based upon a centralized guardrail inventory last updated in 1997. Each of the 7 regions is responsible for maintaining the guardrail in its area; however, only 1 region reported that it maintains an updated guardrail inventory.

MDOT allocated \$7 million and \$6 million to guardrail improvement projects in fiscal year 2002-03 and fiscal year 2003-04, respectively. The regions are required

to monitor their guardrail and recommend guardrail replacement projects for implementation. The regions primarily identify the need to replace guardrail from field reviews or from reports of damaged guardrail.

Maintaining an updated guardrail inventory could assist the regions in monitoring their guardrail to identify outdated guardrail and prioritize guardrail in need of replacement.

We reported this finding in our prior audit. MDOT informed us that it concurred with the recommendation and that it was developing information systems that would include infrastructure data.

RECOMMENDATION

WE AGAIN RECOMMEND THAT MDOT MAINTAIN AN UPDATED GUARDRAIL INVENTORY FOR THE STATE TRUNKLINE SYSTEM.

AGENCY PRELIMINARY RESPONSE

MDOT agreed with this finding. MDOT stated that it has begun the development of a guardrail inventory system, which will be included in its Maintenance Activity Reporting System database. MDOT stated that it will develop the system according to the following schedule:

1. The guardrail inventory system will be developed through a pilot project involving MDOT's North and Southwest Regions in 2005. MDOT expects this pilot project to be completed by September 1, 2005 for these two regions.
2. In 2006, the five other regions will develop their guardrail inventory data using the process developed through the pilot project. MDOT expects this inventory project to be completed by September 1, 2006.

QUALITY ASSURANCE REVIEW OF HIGHWAY CONSTRUCTION DESIGN PLANS

COMMENT

Audit Objective: To assess the effectiveness of TSSA's quality assurance review of highway construction design plans.

Conclusion: We concluded that TSSA was effective in performing its quality assurance review of highway construction design plans. Our report does not include any reportable conditions related to this audit objective.

PROCEDURES FOR SELECTING, MONITORING, AND EVALUATING CONSULTANTS

COMMENT

Audit Objective: To evaluate the effectiveness of TSSA's procedures for selecting, monitoring, and evaluating consultants that perform traffic and safety project design functions.

Conclusion: We concluded that TSSA's procedures for selecting, monitoring, and evaluating consultants that perform traffic and safety project design functions were generally effective. However, we noted a reportable condition related to disclosure of interest (Finding 4).

FINDING

4. Disclosure of Interest

TSSA did not require all employees who were subject to disclosure of interest reporting to file disclosure of interest statements. Preparing disclosure of interest statements helps to ensure the discovery of instances in which employees have financial or personal relationships with contractors that might impair employees' objectivity.

Section 2-8.3 of the *Michigan Civil Service Commission Rules* requires that, at least annually, employees shall disclose all personal or financial interests of the employee or members of the employees' immediate family in any business or entity with which the employees have direct contact while performing official work duties. TSSA employees who have duties related to developing or approving specifications for contracts, recommending the awarding of contracts, or inspecting or approving work performed by contractors would require annual disclosure. MDOT established Guidance Document 10121 to address the civil service rule and to alert employees of their reporting responsibilities.

We determined that 23 (82%) of 28 TSSA employees who were required to file disclosure of interest statements did not have statements on file.

We reported this finding in our prior audit. MDOT informed us that it concurred with the recommendation and that it would have the appropriate employees file disclosure of interest statements; however, TSSA did not obtain the statements as required by MDOT procedures.

RECOMMENDATION

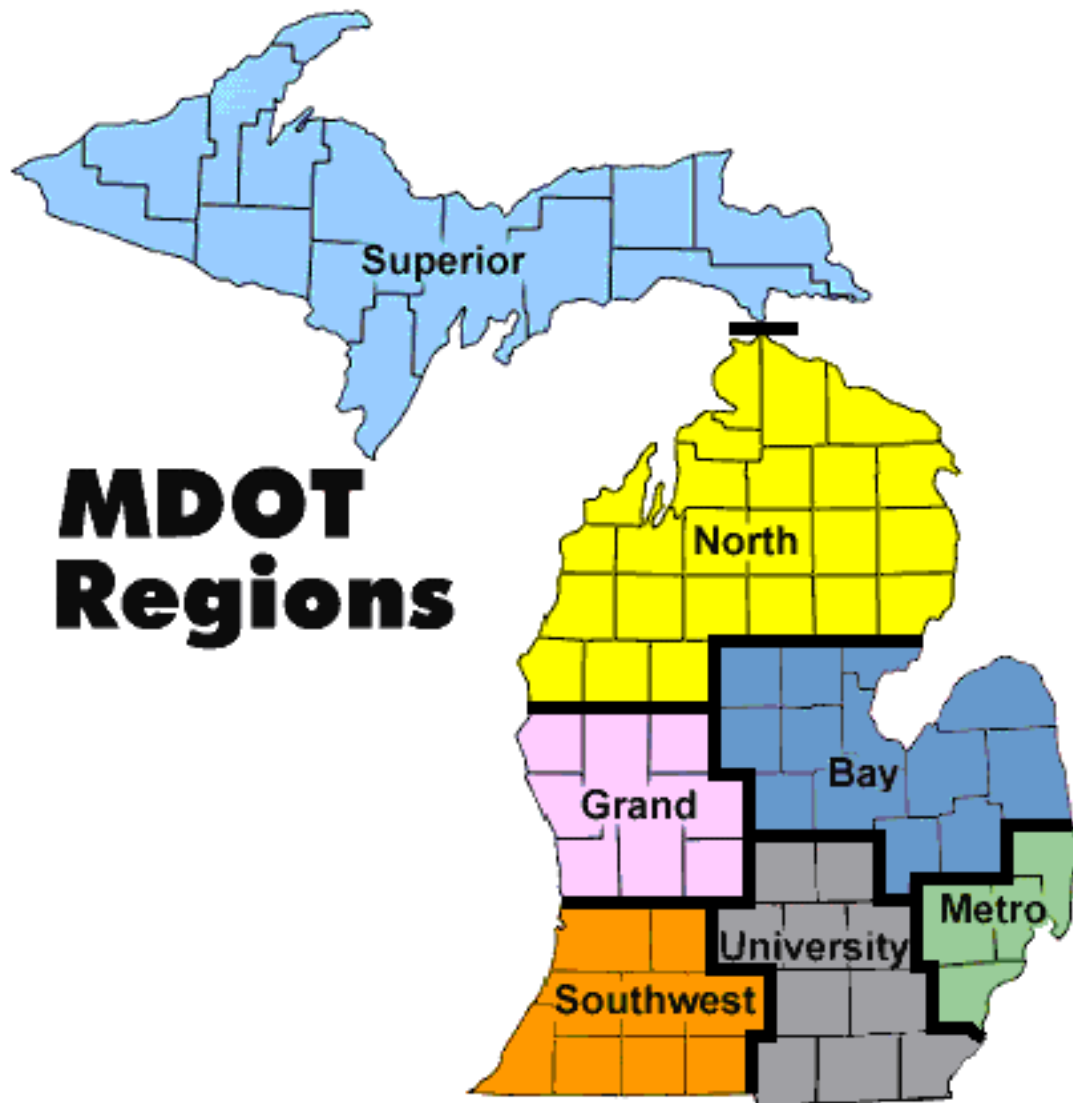
WE AGAIN RECOMMEND THAT TSSA REQUIRE ALL EMPLOYEES WHO ARE SUBJECT TO DISCLOSURE OF INTEREST REPORTING TO FILE DISCLOSURE OF INTEREST STATEMENTS.

AGENCY PRELIMINARY RESPONSE

MDOT agreed with this finding. MDOT stated that TSSA has just completed the yearly update of all disclosure of interest statements for all pertinent employees. TSSA stated that the disclosure of interest statements will be updated yearly in accordance with the required procedures.

SUPPLEMENTAL INFORMATION

TRAFFIC AND SAFETY SUPPORT AREA
Michigan Department of Transportation (MDOT)
Region Areas



Source: MDOT's Web site (<http://www.michigan.gov/mdot>)

GLOSSARY

Glossary of Acronyms and Terms

bid letting	The process of awarding a contract to a contractor based on the amount of a bid.
effectiveness	Program success in achieving mission and goals.
MDOT	Michigan Department of Transportation.
mission	The agency's main purpose or the reason that the agency was established.
performance audit	An economy and efficiency audit or program audit that is designed to provide an independent assessment of the performance of a government entity, program, activity, or function to improve public accountability and to facilitate decision making by parties responsible for overseeing or initiating corrective action.
reportable condition	A matter that, in the auditor's judgment, represents either an opportunity for improvement or a significant deficiency in management's ability to operate a program in an effective and efficient manner.
State trunkline system	The 9,716 miles of highway made up of State ("M"), national ("US"), and interstate ("I") routes that are MDOT's responsibility.
TSSA	Traffic and Safety Support Area.